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2,173,102

METHOD FOR PERMANENT WAVING

Filed Nov. 1, 1937

2 Sheets-Sheet 1

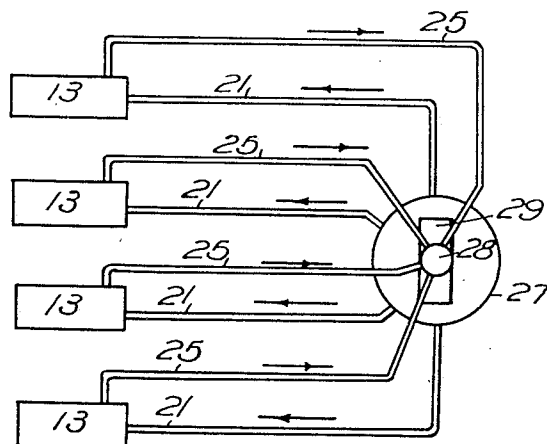
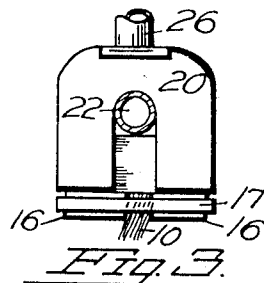
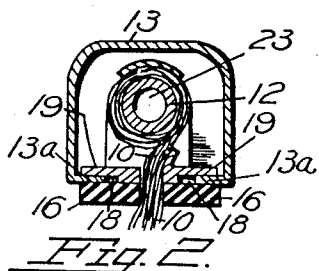
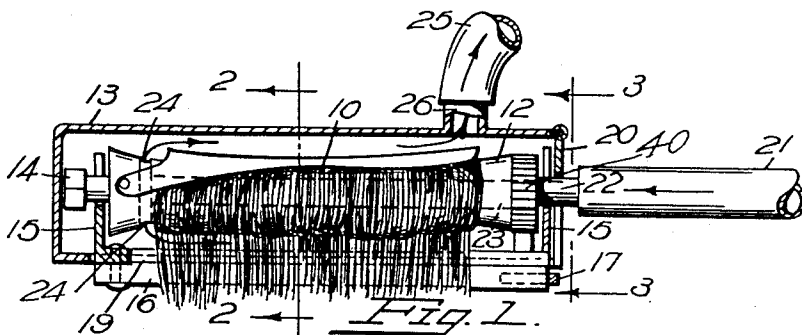


Fig. 4.

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2 Sheets-Sheet 2

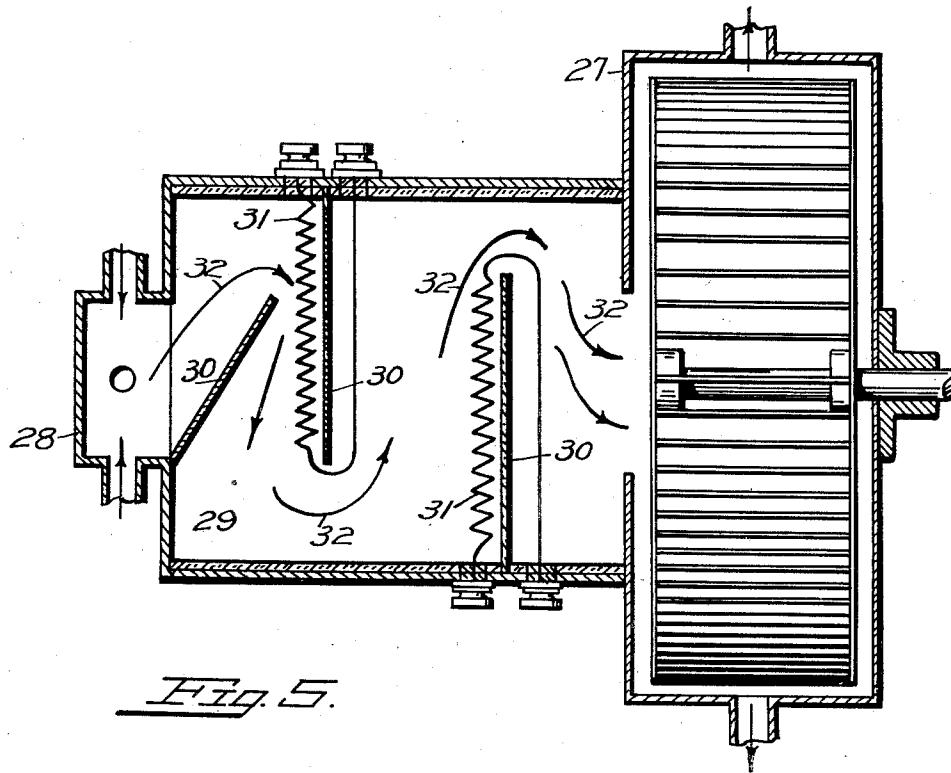


Fig. 5.

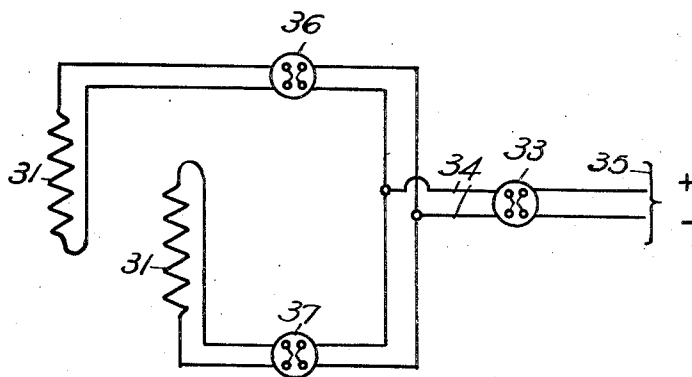


Fig. 6.

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METHOD FOR PERMANENT WAVING

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Application November 1, 1937, Serial No. 172,221

10 Claims. (Cl. 132—36)

This invention relates to improvements in method for producing a so-called permanent wave in human hair.

The common method of producing a long-lasting wave in hair includes the steps of preparing the hair by treatment with a softening agent such as ammonium hydroxide or a solution of sodium carbonate dissolved in water, or a liquid containing a percentage of glycerine or vegetable oil, then wrapping or winding the hair on a curling rod, then applying heat, by steam or direct electric heat to set the wave.

The improvement in this invention, over the common method, comprises the circulation of warmed air of gradually increasing temperature through and around the curled and softened hair to gently warm, expand and dry the hair and then the circulation of progressively cooler or atmospheric air to cool, shrink and set the wave and, if an oil preparation has been applied to the hair, to thoroughly impregnate the hair with the oil and leave a residue thereof on the hair to keep it in a soft and desirable condition.

An object of the invention is to provide a method of waving the hair that reduces to a minimum the hazards of burning or otherwise harming the hair or the scalp.

Another object is the provision of such a method that uses a mild and gradual range of temperature change to heat and then to cool the hair to leave it in a soft desirable condition.

A further object is to provide a method of waving the hair that reduces the time and labor required by such an operation, to a minimum.

A still further object is to produce a wave in the hair that will remain for a maximum period of time.

Other objects and advantages will be more fully disclosed in the following description and in the drawings wherein like parts have been similarly designated and in which:

Figure 1 is a sectional view of a curler that is well adapted to be used with the improved method;

Figure 2 is a sectional view on line 2—2 of Figure 1;

Figure 3 is a sectional view on line 3—3 of Figure 1;

Figure 4 is a diagrammatic illustration of apparatus that may successfully be used with this invention;

Figure 5 is a sectional view of apparatus well adapted to be used with the present method; and

Figure 6 is a wiring diagram that is applicable to the apparatus shown in Figure 5.

The so-called permanent wave is accomplished by a process in which normally straight hair is curled, expanded and deformed or warped and then set into waves or compound curves by shrinking.

While other apparatus may be devised to perform the present improved method, it will be seen that any means for so doing will necessarily embody the elements or their equivalents, of the apparatus herein disclosed as a typical illustration of a preferred means.

According to the method of the present invention, apparatus herewith illustrated is well suited to effect the treatment. Hair 10 that is to be waved, is first moistened and softened with a softening solution that will penetrate to the interior medulla or inside layer of the hair, next it is wrapped around a curling rod 12, Figure 1, which is heat-conductive and separable from its coating housing 13. To facilitate the wrapping, a key, not shown, may be used to engage and turn a square boss 14, on the rod end.

After the hair is wound onto the rod, or during the winding, the rod is placed on its bearings 15, and hinged insulating support members 16 are brought together below the rod and fastened in their operating position, with the lock of hair passing therebetween, as shown in Figures 1, 2 and 3, by a clip 17. A ratchet 40 serves to hold the rod against backward rotation.

The housing 13 having inwardly turned flanges 13a along its lower edges, is next slid longitudinally into place over the curl of hair, along grooves 18 provided between each insulating member 16 and each retaining member 19.

A notched hinged end cover 20 completes the enclosure after the housing is in its operating place. The closure, of course, is not an absolute seal, as this is unnecessary.

Next, a flexible conduit such as a rubber hose 21, is placed over a nipple 22, on the end of the rod 12, the nipple forming a conductive passage from the hose to the hollow interior 23 of the rod, and the discharge ports 24 that connect therewith.

A second hose 25 may be connected to a discharge nipple 26 that connects with the interior of the housing. A fan or centrifugal blower element 27, that illustrates any means for circulating air, is connected with the respective conduits or hose lines 21 and 25 in such a manner that air is forced through conduit 21, through the interior passage 23 in the rod 12, through the ports 24, into the interior of housing 13, along and around the curl of hair 10 and out through nipple 26,

along conduit 25, and thereby returned to the inlet 28 of the blower element. Figure 4 illustrates this closed cycle of air-flow, and a plurality of such systems are commonly used, four systems being illustrated, but more being preferred. The air line discharge connections from the periphery of the blower element 27 are preferably tangential, the illustrations being only diagrammatic.

In Figure 5 an enlarged detail of the blower element is shown together with a heating chamber 29 for the air, located between the inlet 28 and the blower housing. Air entering inlet 28 is drawn past a series of baffles designated by reference character 30, on the inflow side of some of which are located electric heating coils 31. Incoming air is forced along a circuitous path as shown by the arrows 32, before entering the blower proper, and in so flowing, heat units are absorbed thereby from the heating coils 31.

Thus, heated air is directed through the blower and conduits to the curling element to heat, expand and dry the hair on the rod 12 from inside the curl as well as along the outside thereof. The air may be returned to the blower via return conduits 25 or it may be exhausted into the atmosphere through the nipple 26 by omitting the return conduits from the air-conductive system.

In Figure 6, a wiring diagram is shown that is well suited to be used with the heating coils of Figure 5. A main snap switch 33 connects a circuit 34 with a source of electrical energy 35. Switches 36 and 37 respectively, control the flow of energy through the different heating coils 31 so that they may be selectively energized, it being understood that two coils are shown as illustrative, but more coils and/or baffles may preferably be used and similarly controlled.

Human hair is composed of a plurality of layers, the outside one of which is composed of minute horny scales. Alkaline solution applied to the hair softens these scales and permits moisture to enter into the inner part of the hair.

According to this invention the hair is thus softened and wrapped on the curling rod, after which additional application of the softening solution may be made if desired. The heated air is circulated through the rod and around the curl, within the housing, to heat and expand the moistened hair and eventually to dry it by the combined effects of heat and air circulation.

The temperature at which the air is introduced is selectively controlled by the switches 33, 36 and 37 governing the heating coils. After heating and drying has been completed, the heat is progressively reduced or stopped and cool or atmospheric air is circulated to cool the hair to normal temperature and to shrink the hair, thus setting the wave. After the hair is released from the curlers, the outlet conduits, from the blower, may be removed from the housings 13 and be grouped and used as a discharge nozzle from the blower, for further drying of the hair generally, if desired.

The advantages gained in using the circulation of heated air instead of other forms of heat application, are: freedom from burning, either the user or the person receiving the treatment, as the air temperatures are lower than those used in other methods; rapid drying of the hair and setting of the wave due to the vaporizing effect of the circulating warm air and due to the application of heat from the inside of the curl through the conductive curling rod, and also simultaneously the application of heat outside of the curl

within the zone of the inclosure; lower temperatures and more rapid treatment reduce the hazards of discoloration or other damage to the hair; and the final cooling, shrinking of the hair, and setting of the wave is accomplished in one continuous operation to further reduce the cost and time of such a treatment.

Any equivalent device for selectively heating and circulating the warmed air will carry out the present method, the one illustrated being disclosed as an example.

When a solution containing oil or glycerine with or without alkali, is used, the oil tends to soften the hair and the mild heat of the circulating air leaves the hair in a soft, natural condition because a residue of the oil remains on the hair, and because the moving stream of air distributes the oil evenly over the hair and aids in its impregnation of the hair. It is undesirable, and it may be harmful, to over-heat or to over-dry the hair, as it may become discolored, harsh or brittle therefrom. Even when oil is not applied or added, in connection with the waving treatment, the mild gradual heating and cooling of the hair leaves it in a live, soft and healthful condition that retains the wave for a maximum length of time.

What I claim and desire to secure by Letters Patent is:

1. The improvement in the art of permanent waving in which hair while curled is subjected to a moistening, softening and heating action, which comprises subjecting hair so formed and treated, to heat simultaneously applied from inside and outside the curl.

2. The improvement in the art of permanent waving in which hair while curled is subjected to a moistening, softening and heating action, which comprises subjecting hair so formed and treated, to heating applied internally of the curl simultaneously with the passage of dry heated air over and through the curl of hair.

3. The improvement in the art of permanent waving in which hair while curled is subjected to a moistening and softening action, which comprises subjecting hair so formed and treated, to heat transfer simultaneously with the passage of air over and through the curl of hair.

4. The improvement in the art of permanent waving in which hair while curled is subjected to a moistening and softening action, which comprises subjecting hair so formed and treated, to gradually increasing temperature simultaneously with the passage of air over and through the curl of hair.

5. The improvement in the art of permanent waving in which hair while curled is subjected to a moistening and softening action, which comprises subjecting hair so formed and treated, to gradually varying temperature simultaneously with the passage of air over and through the curl of hair.

6. The improvement in a permanent waving method which comprises, subjecting hair in a preformed and softened curl to an expanding and deforming action by the circulation of warmed air through and around the curl.

7. The improvement in a permanent waving method which comprises, subjecting hair in a preformed and softened curl to an expanding and deforming action by the circulation of warmed air at progressively increasing temperatures, through and around the curl, and then shrinking and setting the deformed hair in a wave by subjecting the hair to the cooling influ-

ence of air circulating at progressively decreasing temperatures.

5 8. The improvement in a permanent waving method which comprises, circulating warmed air in a closed cycle, through and around a pre-formed and softened curl of hair, and then cooling and shrinking the said curl of hair to set the wave.

10 9. The improvement in a permanent waving method which comprises, circulating warmed air through and around a pre-formed and softened curl of hair, returning a part of the warmed air to its source, for recirculation, after it has

passed through the curl, and then cooling and shrinking the said curl of hair to set the wave, by continuing the circulation of air at reduced temperatures.

10. The method of permanent waving that 5 comprises, moistening and softening the hair by subjecting it to the influence of a liquid having ingredients of different volatility, forming the hair into a curl, heating and expanding the hair by exposing the curl to a current of warmed air, 10 vaporizing the more volatile ingredient, and then cooling and shrinking the hair to set the wave.

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